Analysis of Spatial Trend in Patronage of Traditional Medicine in Kaduna State, Nigeria

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Abstract
This paper present results on the spatial trend in Patronage of Traditional Medicine in Kaduna State Nigeria. The aim of the study is to analyze the spatial trend in patronage of traditional medicine in Kaduna state. Data from the study was derived from the administration of a structured Questionnaire and data from herbal medicine clinic. Data were collected from a questionnaire survey of a sample of 400 respondents of the study area. Descriptive statistics, the ANOVA, Pearson's correlation and regression analysis were the techniques used to summarize the data and test the hypotheses. The total number of patronage received during this period (15years) showed that Zaria recorded the highest level of patronage with total patronage of 43,530(34.5%) persons; this was closely followed by Zangon-Kataf with 43,095(34.2%) persons, while Igabi had the lowest of 39,398(31.3%) persons. It has it that in 2001, 1,231 people patronized TM in Zaria, while in Igabi and Zangon-Kataf, 1, 459 and 986 people patronize TM respectively. As a result of the increase in the demand for TM, the trend experienced a continuous increase in the three selected areas. This is so as the number of patronage (people that patronize) increase from 1,231 in 2001 in Zaria to 2,759 in 2005 representing 124.1% increase. Similar increase was observed in Igabi and Zangon-Kataf with 314 and 1,672 persons added to the initial number of patronage representing 20.3% and 169.6% increase in the number of patronage respectively. As can be observed, the patronage of TM increased sharply in five years in Zangon-Kataf. Also, from 2005 to 2015, the level of patronage varied among the three areas with Zaria recording 41.2% increase; Igabi recorded 114.6% while Zangon-Kataf recorded 48.1% increase in the level of patronage.
Keywords: Spatial Trend, Traditional Medicine and Patronage

INTRODUCTION
1.1 Introduction
Traditional medicine can be considered as amalgamation of dynamic medical know-how and ancestral healing practice and experience (Joshua, 2010). Traditionally, rural communities in Kaduna State have relied upon the spiritual and practical skills of traditional medicinal practitioners (TMPs), whose botanical knowledge of plant species and their ecology and scarcity are invaluable (Mamman and Laah, 2006). Throughout Nigeria, the gathering of medicinal plants was traditional restricted to TMPs or their trainees. It is estimated that the number of traditional practitioners in Kaduna State is 10,000-20,000 in comparison with 100 medical doctors (Joshua, 2010). For this reason, there is a need to involve TMPs in state healthcare systems through training and evaluation of effective remedies, as they are a large and influential group in primary healthcare.

It is difficult to characterize a 'typical' healer, because there are many different kinds, and the cultural diversity and complexity of their practices are unique, when considered in detail. Most healers have in common, however, that they describe and explain illness in terms of social interaction and that they act on the belief that religion permeates every aspect of human existence. Their concepts of health and illness are more comprehensive than those of orthodox doctors and 'health' as we know it cannot be adequately translated in many Nigerian languages (Mamman and Laah, 2006).

Other prominent features of traditional healers are a deep personal involvement in the healing process, the protection of therapeutic knowledge by keeping it secret and the fact that they are rewarded for their services. The social context of the therapeutical process requires reciprocity and this payment contributes to the effectiveness of the treatment. Over the years, the types and methods of payment for traditional healing have changed, especially in urban settings; practitioners are increasingly demanding monetary payments (Joshua, 2010).

There is now a growing patronage of traditional medicine in Kaduna State and in Nigeria in general, leading to a clash of interest between modern and traditional medicine which may be due to professional and cultural pride. The overall picture that emerges today is that people in our society directly or indirectly use the services of the traditional doctors irrespective of social class (Joshua, 2010). Wagun, (1979) states that traditional medical practitioners are more competent in the treatment of health problems native to Africa, such as malaria and yellow fever than those which are foreign example tuberculosis, measles and chicken pox (Laah, 2002). This paper aimed at analyzing the spatial trend in patronage of traditional medicine in Kaduna state.

1.2. Study Area
1.2.1 Location
Kaduna State is located on the southern end of the high plains of northern Nigeria, bounded by parallels of latitude $9^0 02'$N and $11^0 32'$N, and extends from the upper River Mariga on longitude $6^0 15'$E to $8^0 38'$E of the Greenwich meridian on the foot slopes of the scarp of Jos Plateau (Udo, 1970). The state is divided into three senatorial zones, namely; Kaduna North, Central and South and it comprises twenty three (23) Local Government Areas, 46 Local Development Areas (LDAs), and there are 255 political wards (NPC, 2009). Kaduna State shares its boundary with Katsina State to the North, Niger State and Abuja to the west, Plateau State to the South and Kano State to the east. The State occupies an area of approximately 45,711.2km^2 and had a population of 6,113,503 people with an annual growth rate of 3% during the 2006 census (FRN, 2010).
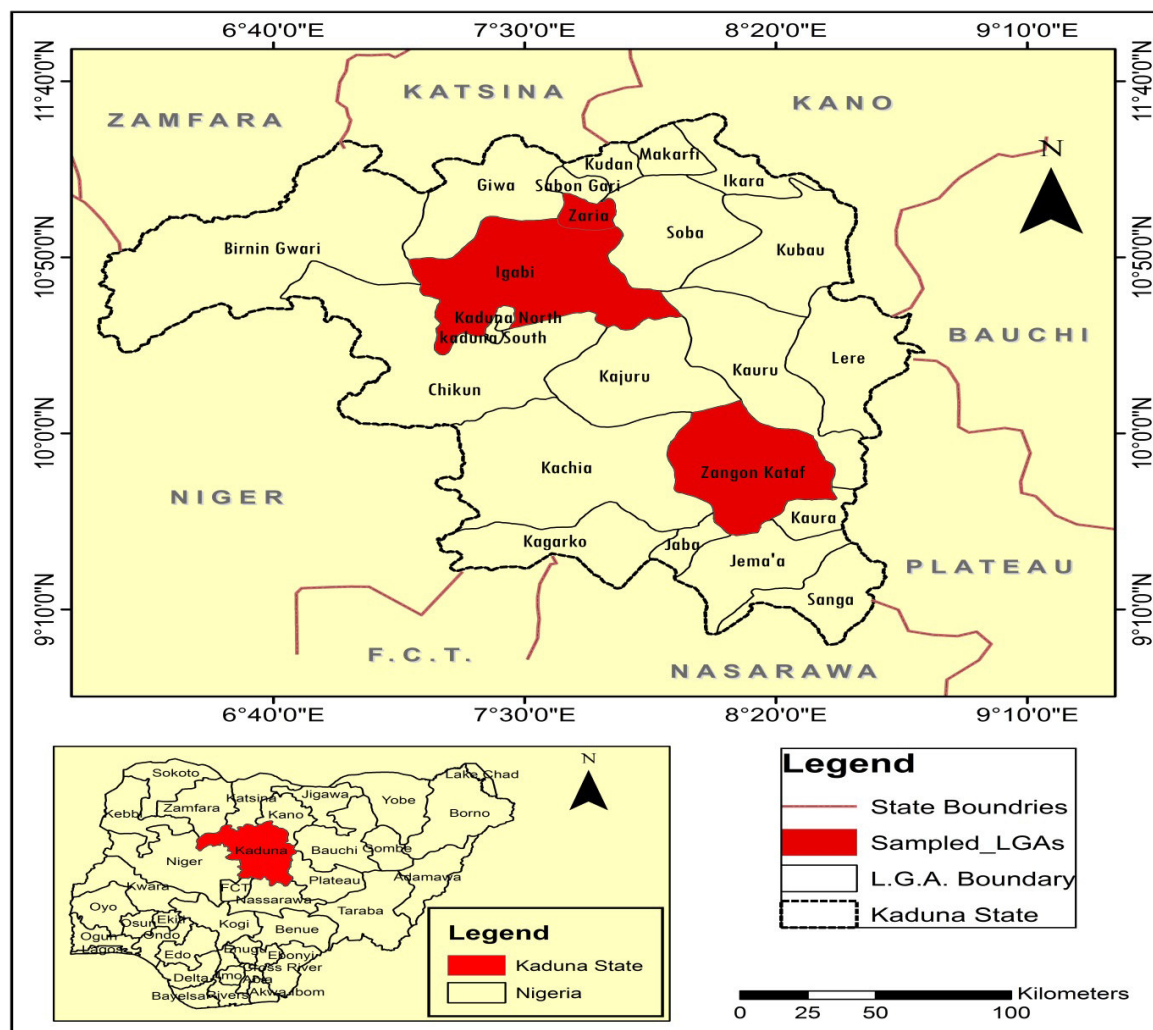

Fig. 1.1: Kaduna State Showing the Study Area
Source: Adapted from Administrative Map of Kaduna State

1.3 Materials and Methods
1.3.1 Types of Data
The types of data include socio-economic data, place or layout of resident data, demographic data; cultural data and perceive distance such as distance from the health care service provision is used.
1.3.2 Sources of Data
The data that was used for this study were obtained from both primary and secondary sources. The primary source involves the use of structured questionnaires while the secondary source involves the use of textbooks, magazines, journals, articles, gazettes and other relevant materials were used for the review of related literature.
1.3.2.1 *Primary sources*
Primary source data are the information obtained through first hand, collated by the researcher. It involves the use of semi-structured questionnaire.

The actual respondents include traditional medical practitioners, patrons of traditional medicine, community leaders, NGO's, Institutions and Agencies in Kaduna State. The respondents were selected at the point of administering traditional medicine. The research assistants were at the healing point to administer the questionnaires to willing clients/ patients on a daily basis until the required sample size was obtained.

1.3.2.2 *Secondary Sources*

As part of the secondary data, existing official and unofficial statistics from both national and international publications, including articles, journals, books, conference papers, theses and dissertations were used. Some of the publications from WHO/UNICEF were used as guides. Data from Federal and State Ministries of Health/Planning and the National Bureau of Statistics (NBS) were required for background information on distribution of healthcare facilities. Data were also obtained from the National Population Commission (NPC) publications, analytical reports and other commissioned papers.

In addition, records and documents from Kaduna State health and revenue departments, general hospitals, NAFDAC centers, dispensaries and clinics were used. Downloaded online articles and reports of conferences of national and international agencies from several web sites were used and some of these pieces of information provided answers to several questions in this research.

1.3.3   Sampling Design and Sample Size

Kaduna State has a population of 6,113,503 (FGN, 2007). It comprises of twenty three (23) Local Government Areas, grouped into three senatorial districts. Three Local Government Areas were selected for the study. The selection of these three LGAs was based on certain criteria.

One Local Government Area was chosen from each of the three senatorial districts. The LGA chosen was the one with the highest population in each of the senatorial districts in Kaduna State. Therefore, the LGAs chosen are Zaria, Igabi and Zangon Kataf.

Table 1: Distribution of LGAs by Senatorial Zones

NORTH Zone 1		CENTRAL Zone 2		SOUTH Zone 3	
LGA	POPN	LGA	POPN	LGA	POPN
Ikara	194,723	Birningwari	258,581	Jaba	155,973
Kubau	280,704	Chikun	372,272	Jema,a	278,202
Kudan	138,956	Giwa	292,384	Kachia	252,568
Lere	339,740	Igabi	430,753	Kagarko	239,058
Makarfi	146,574	Kaduna north	364,575	Kaura	174,626
Sabongari	291,358	Kaduna South	402,731	Kauru	221,276
Soba	291,173	Kajuru	109,810	Sanga	151,485
Zaria	406,990			ZangonKataf	318,991
8		7		8	

Source: National Population Commission, 2009

The systematic random sampling was employed to select the wards from each LGA, for the administration of questionnaire. All the wards in the selected Local Government Areas were arranged alphabetically and every other third ward was selected as samples for questionnaire administration. Tables 2 present the details.

Wards in Igabi LGA		
1.Afaka	6.Kerewa	11.Turunku
2.Birnin Yero	7.Kwarau	12.Zangon Aya
3.Gadan Gaya	8.Riga Chikun	
4.Gwaraji	9.Rigasa	
5.Igabi	10.Sabon Birni	
Wards in ZangonKataf LGA		
1.Gidan Jatau	6.Unguwan Gaya	11.Zonzon
2.Gora	7.Unguwan Rimi	
3.Kamuru Ikulu	8.Zaman Dabo	
4.Kamanton	9.Zango Urban	
5.Madakiya	10.Zonkwa	
Wards in Zaria LGA		
1.Angwan Fatika	6.Kauran Limanci	11.Tudun Wada
2.Angwan Juma	7.Kufena	12.Tukurtukur
3.Dambo	8.Kwarbai A	13.Wuciciri
4.Dutsen Abba	9.Kwarbai B	
5.Gyallesu	10.Kona	
Selected wards in Kaduna		
Igabi LGA	**ZangonKataf LGA**	**Zaria LGA**
Gadan Gaya	Kamuru Ikulu	Dambo,
Kerewa,	Unguwan Gaiya	Kauran Limanci
Rigasa	Zango Urban	Kwarbai B
Zangon Aya		Tukurtukur

Source: National Population Commission, 2009

Yamane, (1961), sample size of a given population determination formulae is used to calculate the number of questionnaire to be administered. The formula is as follows:

Finite population $(n_2) = \dfrac{N}{1+ N (e_i)^2}$

Where: n= Sample size

e_i = Level of precision or Earlier constant (0.05 degree of freedom)

N= Population Size = 1,156,734

$(n_2) = \dfrac{1,156,734}{1+ 1,156,734(0.05)^2}$

$= \dfrac{1,156,734}{2892.835}$

$= 400$

Therefore, the copies of questionnaire administered were 400 distributed as revealed in Table 3

Table 3: Distribution of Questionnaires in the Selected LGA's

Selected LGA	Population	No. of questionnaires administered per LGA.
Zaria	406,990	141
Igabi	430,753	149
Zangon-Kataf	318,991	110
Total	1,156,734	400

Source: National Population Commission, 2009 / Field Survey, 2014

The purposive sampling technique was used to administer the questionnaire at the healing point to willing client on daily basis until the required sample size was obtained. Kerlinger (1999) describes purposive sampling as being characterized by the use of personal judgment and a deliberate attempt to obtain representative samples by including presumable typical areas or groups in the sample.

1.3.4   Method of Data Analysis

Both descriptive and inferential statistics were used in the analysis. The descriptive statistical analysis was adopted for summarization of data, tables and graphs.

1.4Results and Discussions

1.4.1   Spatial Trends of Traditional Medicine patronage from 2001 to 2015

Fig 1.2 shows the spatial trends in the patronage of traditional medicine (TM) from 2001 to 2015. The total number of patronage received during this period (15years) showed that Zaria recorded the highest level of patronage with total patronage of 43,530 persons; this was closely followed by Zangon-Kataf with 43,095

persons, while Igabi had the lowest of 39,398 persons. It has it that in 2001, 1,231 people patronized TM in Zaria, while in Igabi and Zangon-Kataf, 1, 459 and 986 people patronize TM respectively. As a result of the increase in the demand for TM, the trend experienced a continuous increase in the three selected areas. This is so as the number of patronage (people that patronize) increase from 1,231 in 2001 in Zaria to 2,759 in 2005 representing 124.1% increase. Similar increase was observed in Igabi and Zangon-Kataf with 314 and 1,672 persons added to the initial number of patronage representing 20.3% and 169.6% increase in the number of patronage respectively. As can be observed, the patronage of TM increased sharply in five years in Zangon-Kataf. Also, from 2005 to 2015, the level of patronage varied among the three areas with Zaria recording 41.2% increase; Igabi recorded 114.6% while Zangon-Kataf recorded 48.1% increase in the level of patronage (Fig 1.2). The general impression is that there is an upward trend in the patronage of TM across the three selected areas.
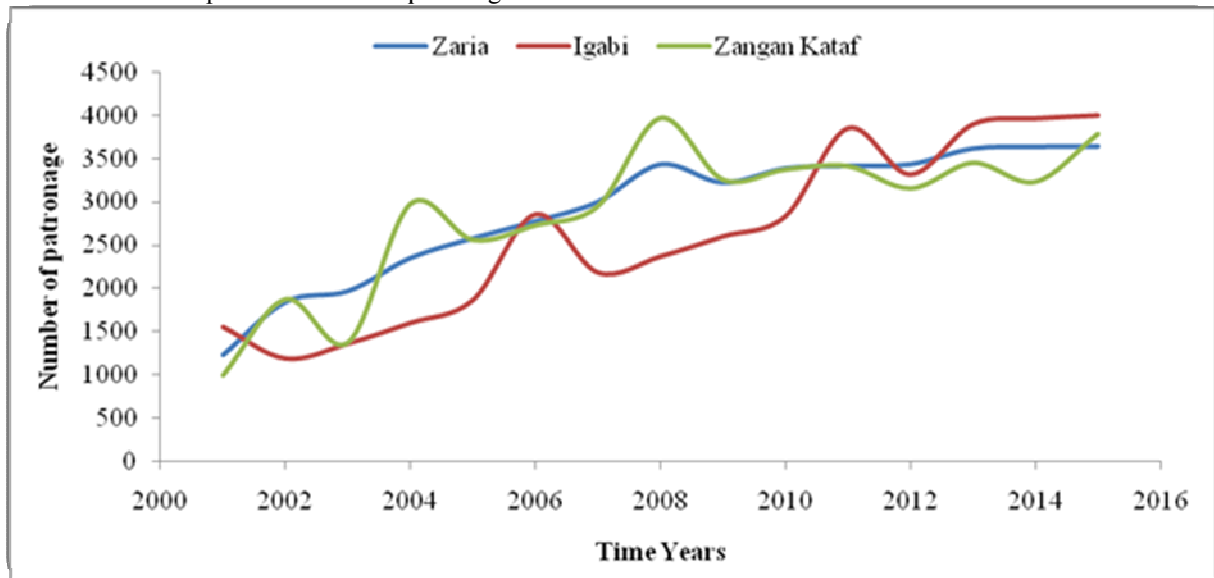

Fig 1.2: Distribution of Respondent by Spatial trend in patronage from 2001 to 2015
Source: Traditional Medicine Clinic, 2014

Figure 1.3 gives information on the changes in TM patronage over time in Zaria. The trend depicts an upward movement; implying increase in the level of patronage of TM over time. It simply showed that for the time period (15years), TM increased by 87.2%. As already noted in Figure 1.2, there were yearly changes in the patronage of TM in Zaria. For instance, in 2001, the level of patronage of TM was 1,231 persons, this figure increased to 2,776 persons in 2006 representing 125.5% increase. Also, from 2006 to 2012, the patronage level of TM stood at 3,433 persons representing 23.7% increase in the level of patronage. This further increased by 6.1% to 3,642 in 2015.
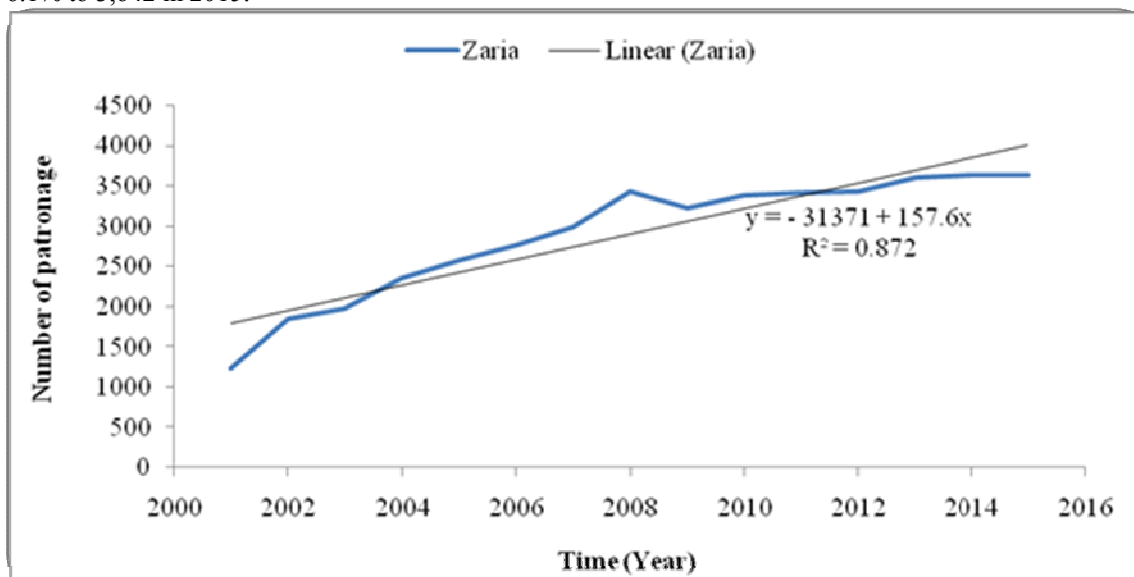

Fig 1.3: Distribution of Respondent by Trend in patronage from 2001 to 2015 in Zaria
Source: Traditional Medicine Clinic, 2014

Figure 1.4 also gives information on the changes in TM patronage over time in Igabi. The trend depicts an upward movement; implying increase in the level of patronage of TM over time. It simply shows that for the time period (15years), TM increased by 90.2%. There were noticeable yearly variations in the patronage of TM in Igabi over the 15years period. For instance, in 2001, the level of patronage of TM was 1,549 persons, this figure increased to 2,853 persons in 2006 representing 84.2% increase. Also, from 2006 to 2012, the patronage of TM stood at 3,316 persons representing 1.6% increase in the level of patronage. This figure further increased by 20.6% to 3,998 in 2015.
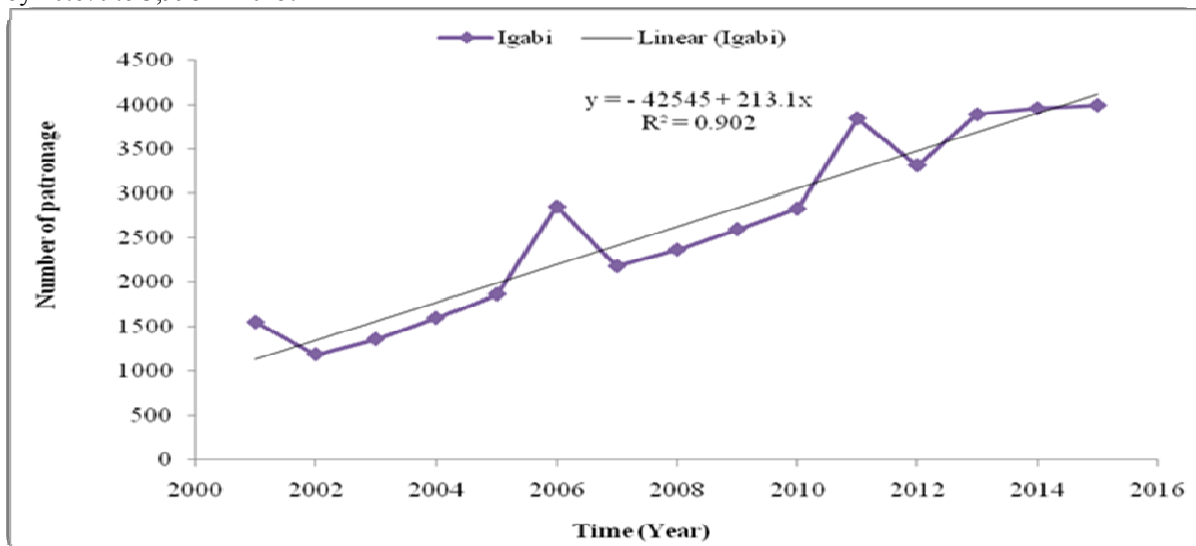

Fig 1.4: Distribution of Respondent by Trend in patronage from 2001 to 2015 in Igabi
Source: Traditional Medicine Clinic, 2014

Figure 1.5 also gives information on the changes in TM patronage over time in Zangon-Kataf. Likewise, the trend of TM patronage in Zangon-Kataf represents an upward movement; implying increase in the level of patronage of TM over time. It clearly revealed that for the time period (15years), TM increased by 64.7%. There were also clear variations in the yearly patronage of TM in Zangon-Kataf over the 15years period. For instance, in 2001, the level of patronage of TM was 986 persons, this figure increased to 2,729 persons in 2006 representing 176.8% increase. Also, from 2006 to 2012, the patronage of TM stood at 3,158 persons representing 15.7% increase in the level of patronage. This figure further increased by 20% to 3,789 in 2015.
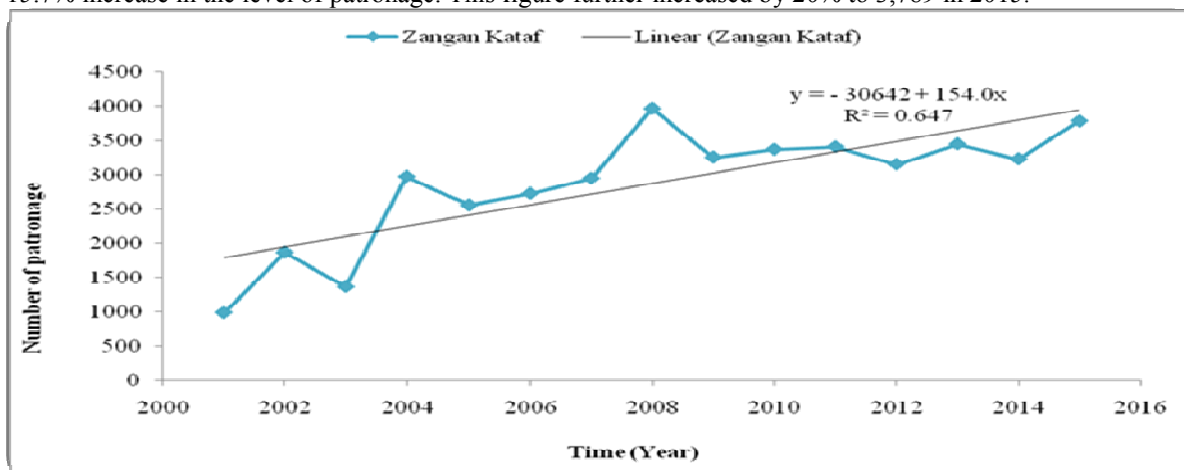

Fig 1.5: Distribution of Respondent by Trend in patronage from 2001 to 2015 in Zangon Kataf
Source: Traditional Medicine Clinic, 2014

1.4.2 Analysis of Significant Trend in Traditional Medicine Patronage in Zaria

In this section of the paper, the researcher made an attempt to find out if there is a significant trend in TM patronage over time (15 years) in Zaria. This was tested using linear regression. The test statistic for linear regression is the regression gradient. According to Kundzewicz & Robson (2004), linear regression is one of the most common tests for trend and, in its basic form, assumes that data are normally distributed. The idea here is that the t-statistic on β_1 is tested to determine if it is significantly different from zero. If the slope is non-zero, it means that there is a linear trend in Y (TM patronage) over time, with rate equal to β_1. But, when there is no trend, the slope (b_1) is zero and the equation results in zero percent change (i.e., $\beta_1 = 0$) (National Nonpoint

Source Monitoring Programme, 2011). Data on TM patronage in Zaria was taken as the cumulative of all reported number of TM patronage from 2001 to 2015. The linear trend for this study is modified after Kareem *et al*., (2012) and mathematically defined thus:

$T = b_o + b_1t$ …………………………………………equation 1

Where:

T = Number of patronage of TM

b_o = intercept of the linear trend line

b_1 = slope of the linear trend line (regression coefficient) and

t =time period (2001 to 2015)

The test statistic result in Table 4 showed that the slope of the trend (b_1) was non zero, it meant that there was a significant linear trend in TM patronage ($t = 9.44$, $p<0.05$). The standardized regression coefficient showed that increase in time period would result in 93.4 per cent increase in the number of TM patronage (Table 4). The linear trend equation of TM patronage over time in Zaria is given as follows:

$T = -313716.6 + 0.934t$ …………………………………………. equation 4.3

The slope of 0.934 further indicated that over the past 15 years, Zaria experienced an average increase in TM patronage of about 94 persons per year.

Table 4: Distribution of Respondent by Summary of linear regression result

Variables	Coefficients		
	B	B	t-value
Year	157.68	0.934	9.44*
Test results			
F- value	89.180*		
R	0.934		
R^2	0.873		
Constant	-313716.6		-9.357*
DF	1/13		

*significant at 5% significance level

Source: SPSS Window Output Version 20.0

1.4.3 Analysis of Significant Trend in Traditional Medicine Patronage in Igabi

The test statistic result in Table 5 shows that the slope of the trend (b_1) was non zero, it meant that there was a significant linear trend in TM patronage ($t = 10.995$, $p<0.05$). The standardized regression coefficient shows that increase in time period would result in 95 per cent increase in the number of TM patronage (Table 5). The linear trend equation of TM patronage over time for Igabi is given as follows:

$T = -425457.55+ 0.950t$ …………………………………………. equation 2

The slope of 0.950 indicated that over the past 15 years, Igabi experienced an average increase in TM patronage of about 95 persons per year.

Table 5: Distribution of Respondent by Summary of Linear Regression Result

Variables	Coefficients		
	B	β	t-value
Year	213.19	0.950	10.995*
Test results			
F- value	120.881*		
R	0.950		
R^2	0.903		
Constant	-425457.55		-10.927*
DF	1/13		

*significant at 5% significance level

Source: SPSS Window Output Version 20.0

1.4.4 Analysis of Significant Trend in Traditional Medicine Patronage in Zangon-Kataf

The test statistic result in Table 6 showed that the slope of the trend (b_1) was non zero, it meant that there was a significant linear trend in TM patronage ($t = 4.882$, $p<0.05$). The standardized regression coefficient showed that increase in time period would result in 81 per cent increase in the number of TM patronage (Table 6). The linear trend equation of TM patronage over time in Zangon-Kataf is given as follows:

$T = -306423.54+ 0.803t$ …………………………………………. equation 3

The slope of 0.803 showed that over the past 15 years, Zangon-Kataf experienced an average increase in traditional medicine patronage of about 80 persons per year.

Table 6: Distribution of Respondent by Summary of Linear Regression Result

Variables	Coefficients		
	B	B	t-value
Year	154.03	0.803	4.882*
Test results			
F- value	23.837*		
R	0.804		
R^2	0.647		
Constant	-306423.54		-4.837*
DF	1/13		

*significant at 5% significance level

Source: SPSS Window Output Version 20.0

Conclusion

Spatial trend in patronage of traditional medicine play a crucial role in determining the pattern, general tendency, movement or direction of flows of traditional medicine patronage in Kaduna State.From the research findings, it became obvious that trend in patronage of traditional medicine plays a dominant role to show the behavioural pattern of patrons of traditional medicine in the study area.

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